

FIG. 1a

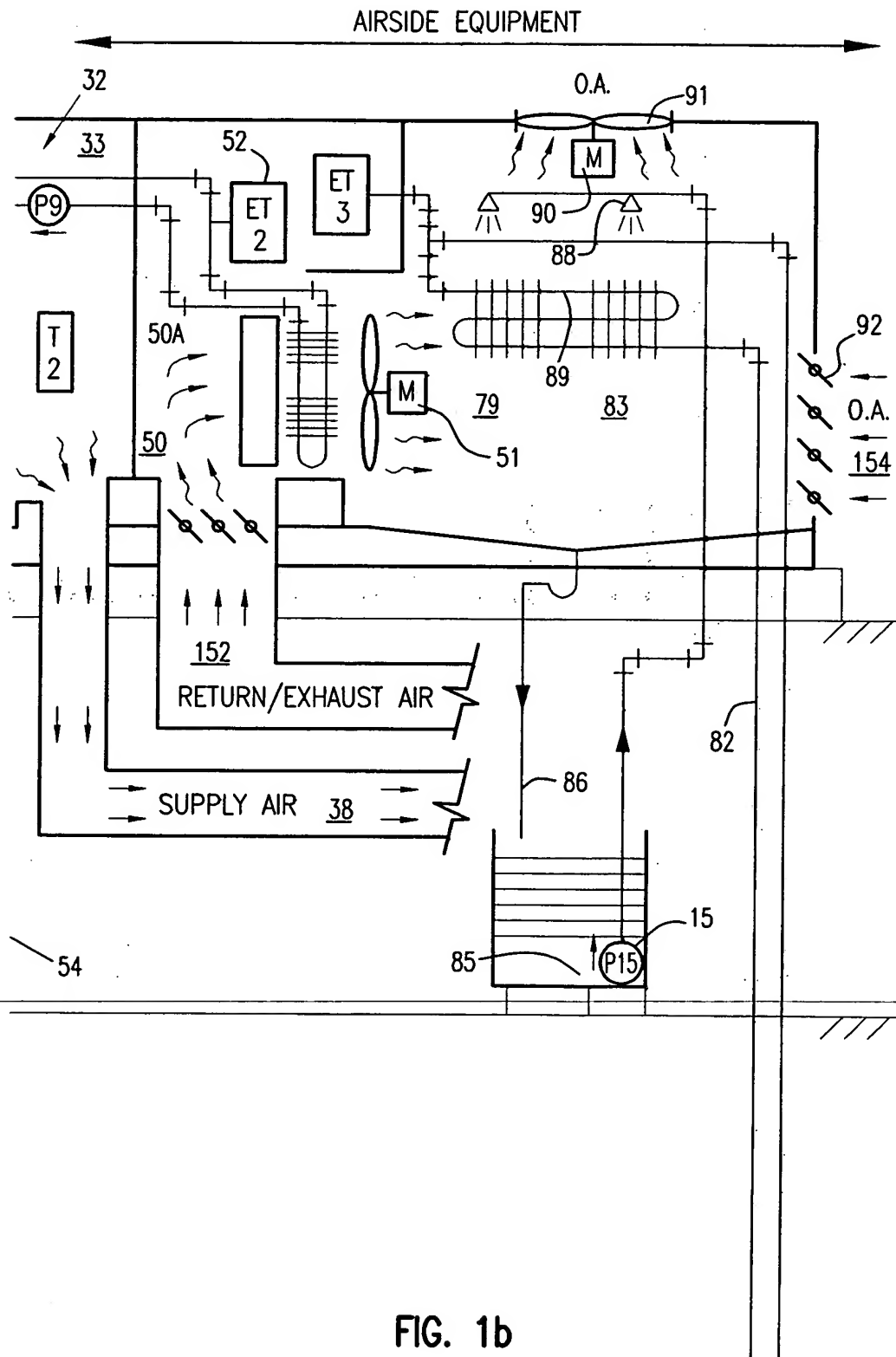
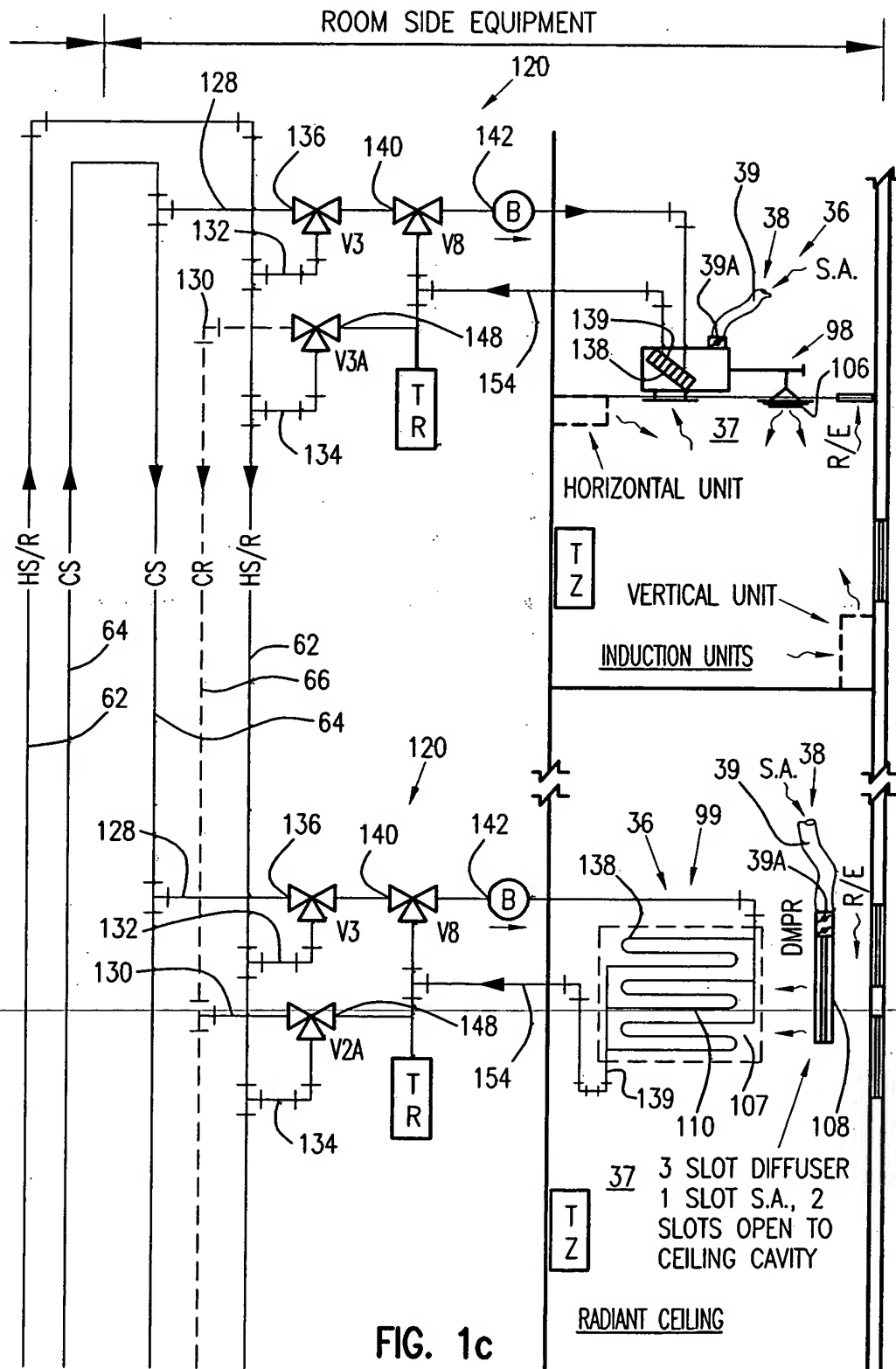


FIG. 1b



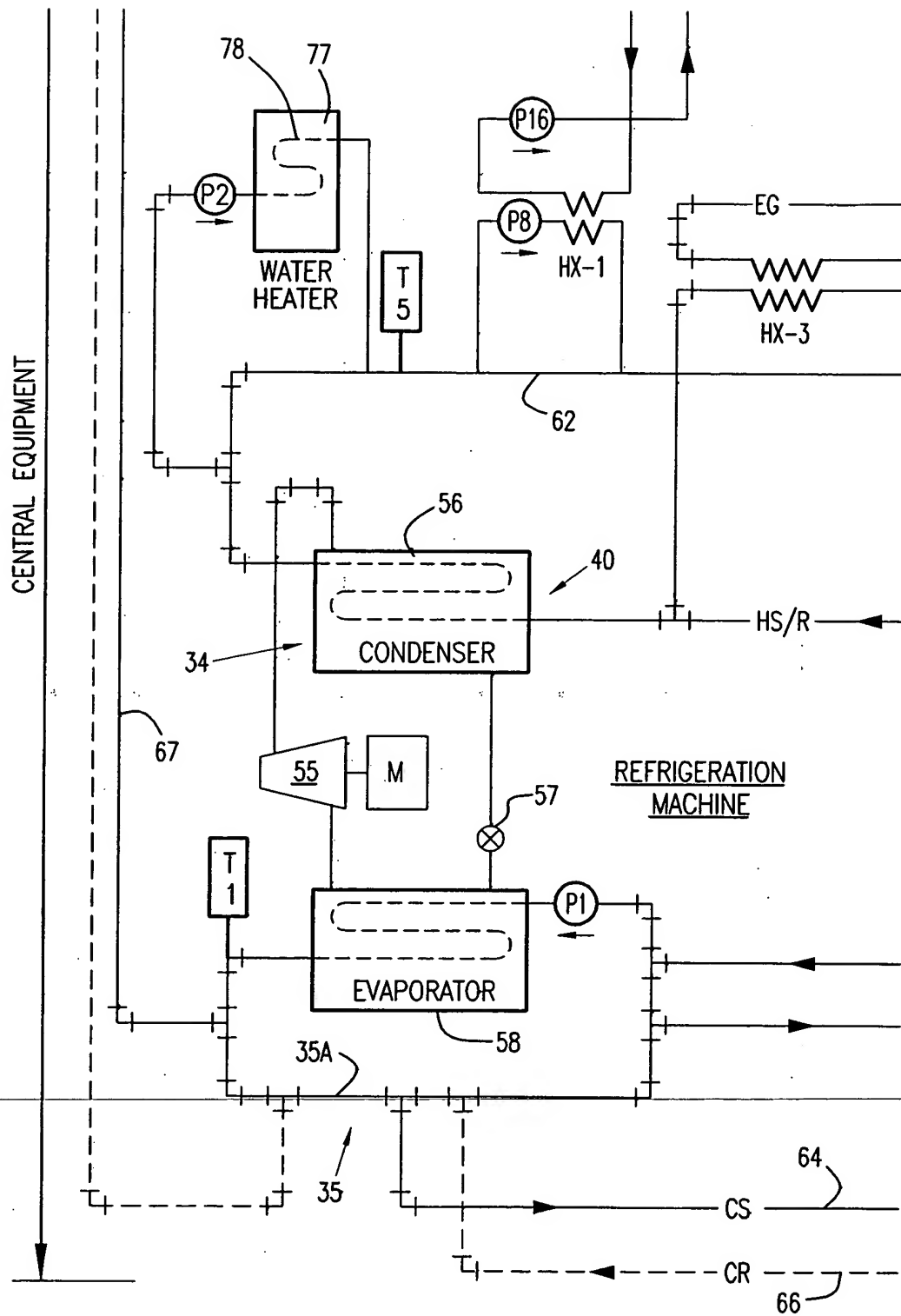


FIG. 1d

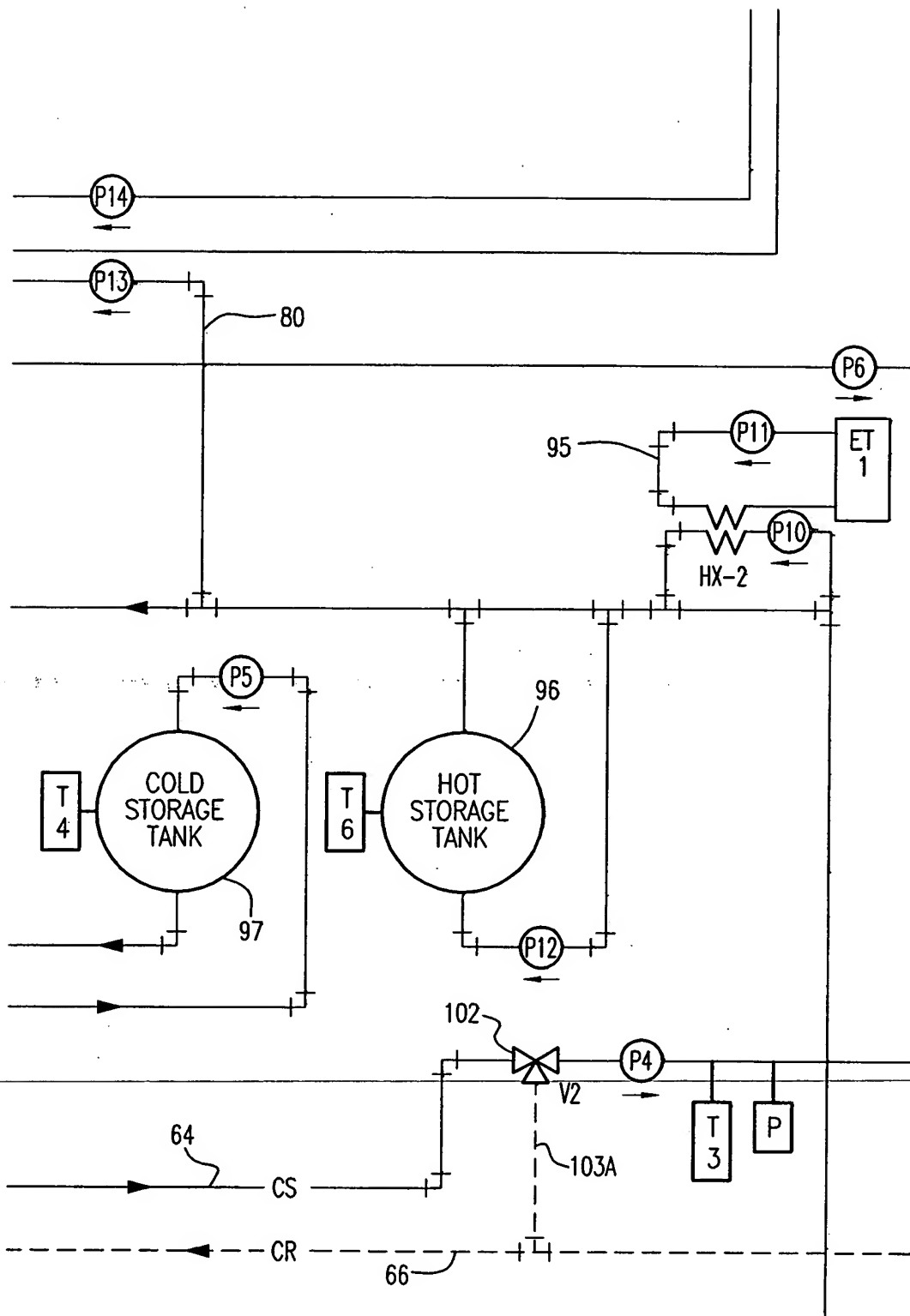


FIG. 1e

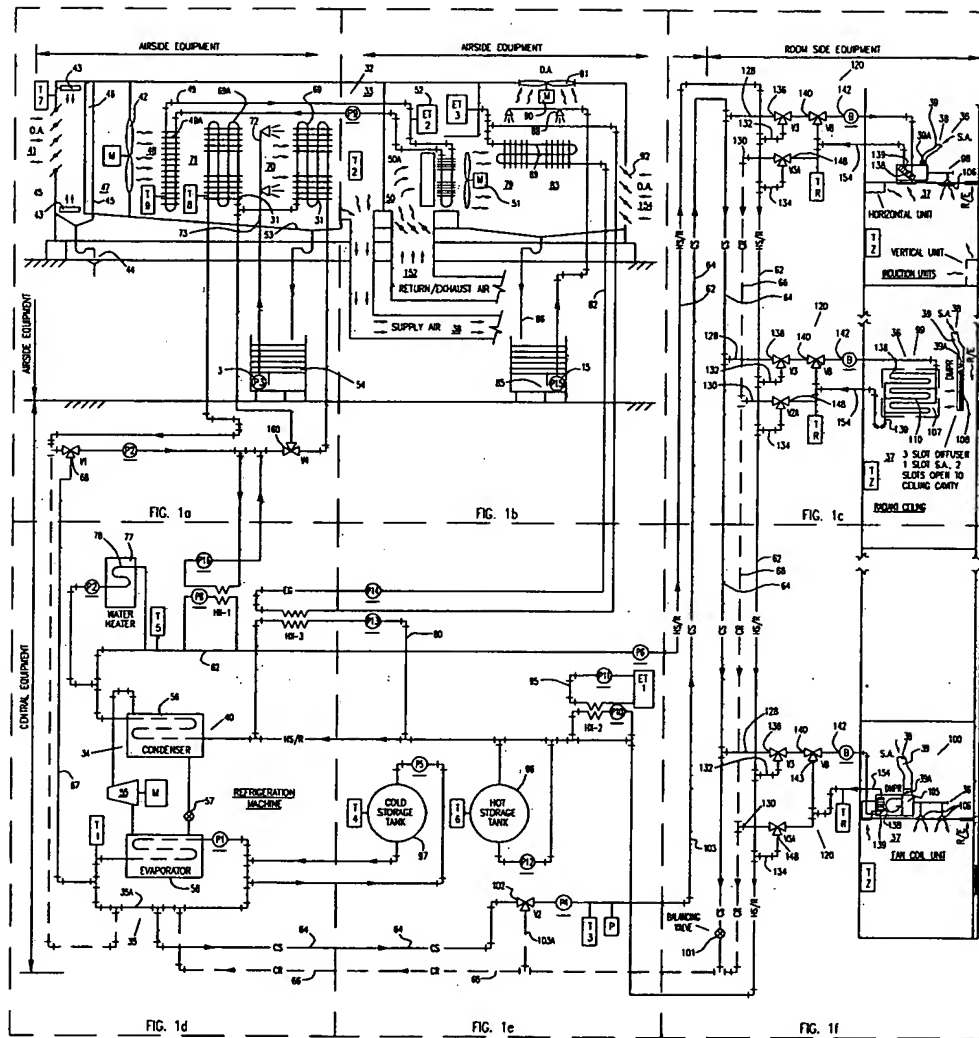



FIG. 1g

——CS——	COLD WATER SUPPLY PIPE
-----CR-----	COLD WATER RETURN PIPE
—HS/REG—	HOT WATER COMBINATION SUPPLY & RETURN PIPE
——EG——	ETHYLENE GLYCOL SUPPLY OR RETURN PIPE
O.A.	OUTSIDE AIR
S.A.	SUPPLY AIR (48 DEG. DRY BULB. YEAR ROUND)
R/E	RETURN / EXHAUST AIR TO EVAPORATIVE COOLER
D.A.	DISCHARGE AIR TO ATMOSPHERE
ET-1	SYSTEM EXPANSION TANK
ET-2	RUNAROUND COILS EXPANSION TANK
ET-3	EVAPORATIVE COOLER EXPANSION TANK
	HEAT EXCHANGER
HX-1	SPRAYED COIL / HUMIDIFICATION HEAT SOURCE HEAT EXCHANGER
HX-2	SALVAGE ENERGY TO REMOTE HEATING LOADS HEAT EXCHANGER
HX-3	HOT WATER / ETHYLENE GLYCOL / EVAPORATIVE COOLER HEAT EXCHANGER
V _B	MODULATING 3 WAY, ZONE BLENDING VALVE
V ₁	MODULATING 3 WAY, MIXING VALVE (AIR SIDE HEATING HUMIDIFICATION AND COOLING COIL)
V ₂	MODULATING 3 WAY, MIXING VALVE (ROOM SIDE COLD WATER LOOP)
V ₃	2 POSITION 3 WAY CHANGE OVER VALVE (UP STREAM OF ROOM SIDE EQUIPMENT)
V ₄	2 POSITION 3 WAY DIVERTING VALVE
V _{3A}	2 POSITION 3 WAY CHANGE OVER VALVE (DOWN STREAM OF ROOM SIDE EQUIPMENT)

PUMP AS FOLLOWS

ALL PUMPS ARE CONSTANT SPEED UNLESS OTHERWISE INDICATED

- * INDICATES VARIABLE SPEED DRIVE PUMP
- ** INDICATES PUMP CONTROLLED BY A DISCHARGE PRESSURE CONTROLLER
- ✓ INDICATES PUMPS ARE CONTROLLED BY TEMPERATURE

-
- PUMP B — BLENDING PUMP, ROOM SIDE EQUIPMENT
 - PUMP 1 — COLD WATER, EVAPORATOR PRIMARY LOOP
 - PUMP 2 — COLD WATER SUPPLY TO AIRSIDE EQUIPMENT COOLING COIL
 - ✓* PUMP 3 — COOLING COIL SPRAY PUMP
 - ** PUMP 4 — COLD WATER SUPPLY TO ROOM SIDE LOOP
 - PUMP 5 — COLD WATER STORAGE TANK BYPASS
 - PUMP 6 — HOT WATER COMBINATION SUPPLY / RETURN LOOP
 - PUMP 7 — WATER HEATER BYPASS
 - ✓* PUMP 8 — HX-1 BYPASS
 - ✓* PUMP 9 — PREHEAT / PRE COOL RUN AROUND COIL LOOP

FIG. 2a

PUMP 10 - HX-2 BYPASS
PUMP 11 - HX-2 SALVAGE ENERGY, SUPPLY / RETURN LOOP
PUMP 12 - HOT WATER STORAGE TANK BYPASS
PUMP 13 - HX-3 BYPASS
PUMP 14 - EVAPORATIVE COOLER LOOP (HOT WATER, HX-2,
ETHYLENE GLYCOL)
PUMP 15 - EVAPORATIVE COOLER SPRAY PUMP
PUMP 16 - HX-1 SECONDARY LOOP (HUMIDIFICATION HEATING
SOURCE)

THERMOSTAT AS FOLLOWS

T1 - COLD WATER SUPPLY FROM EVAPORATOR, 40 DEGREES
SUMMER, RAMP TO 52° WINTER
T2 - AIR SIDE SUPPLY AIR, 48 DEGREES DRY BULB, WET BULB,
DEW POINT YEAR ROUND
T3 - COLD WATER SUPPLY TO ROOM SIDE EQUIPMENT, 52 DEGREES
YEAR ROUND
T4 - COLD WATER STORAGE TANK
T5 - HOT WATER SUPPLY 95 DEGREES SUMMER, RAMP UP TO 120
DEGREES WINTER
T6 - HOT WATER STORAGE TANK
T7 - OUTSIDE TEMPERATURE
T8 - REHEAT COIL DISCHARGE TEMPERATURE
T9 - RUN AROUND PREHEAT COIL DISCHARGE TEMPERATURE
TZ - ROOM SIDE ZONE THERMOSTAT

FIG. 2b

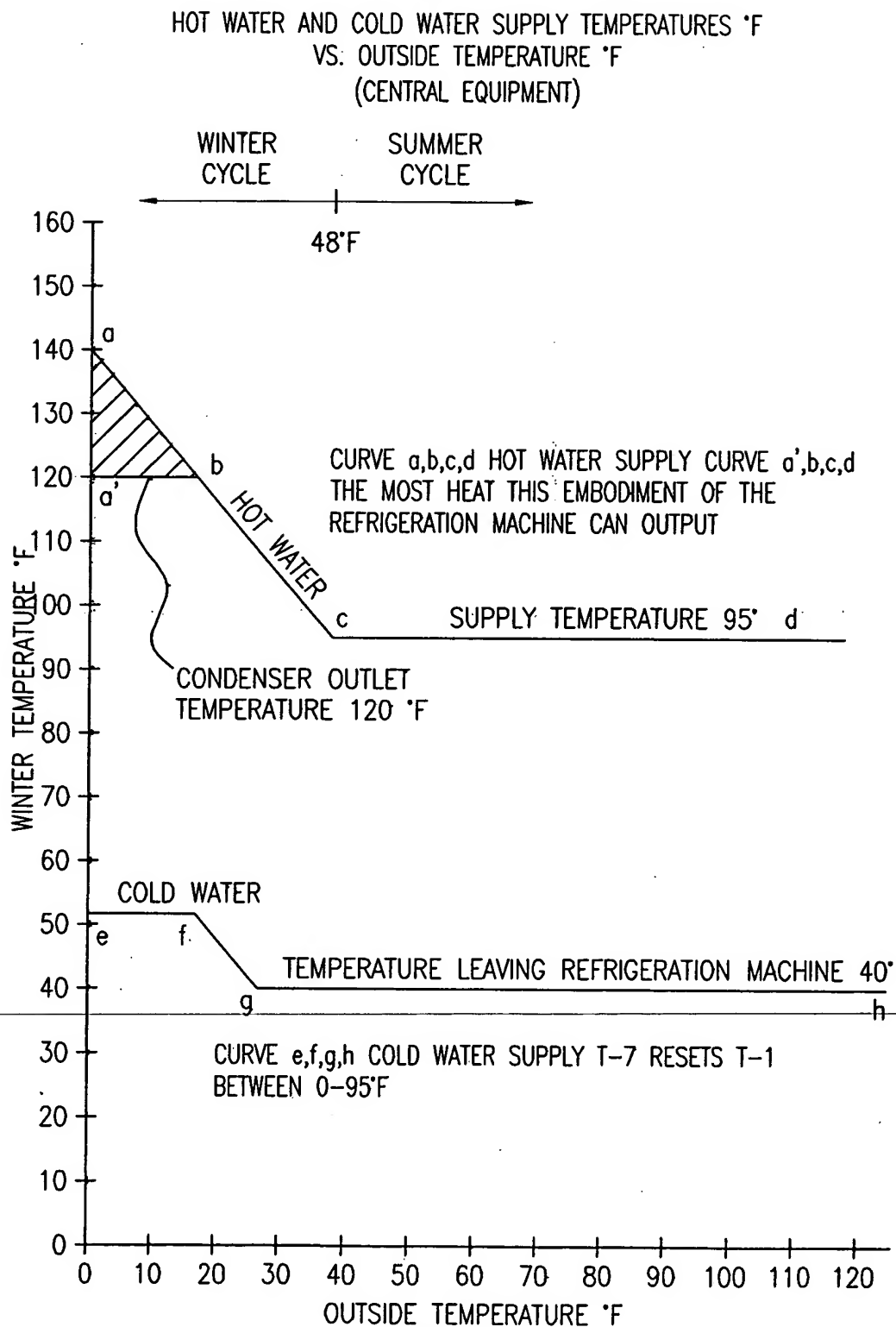


FIG. 3

AIRSIDE & ROOMSIDE DEWPOINT TEMPERATURE °F VS

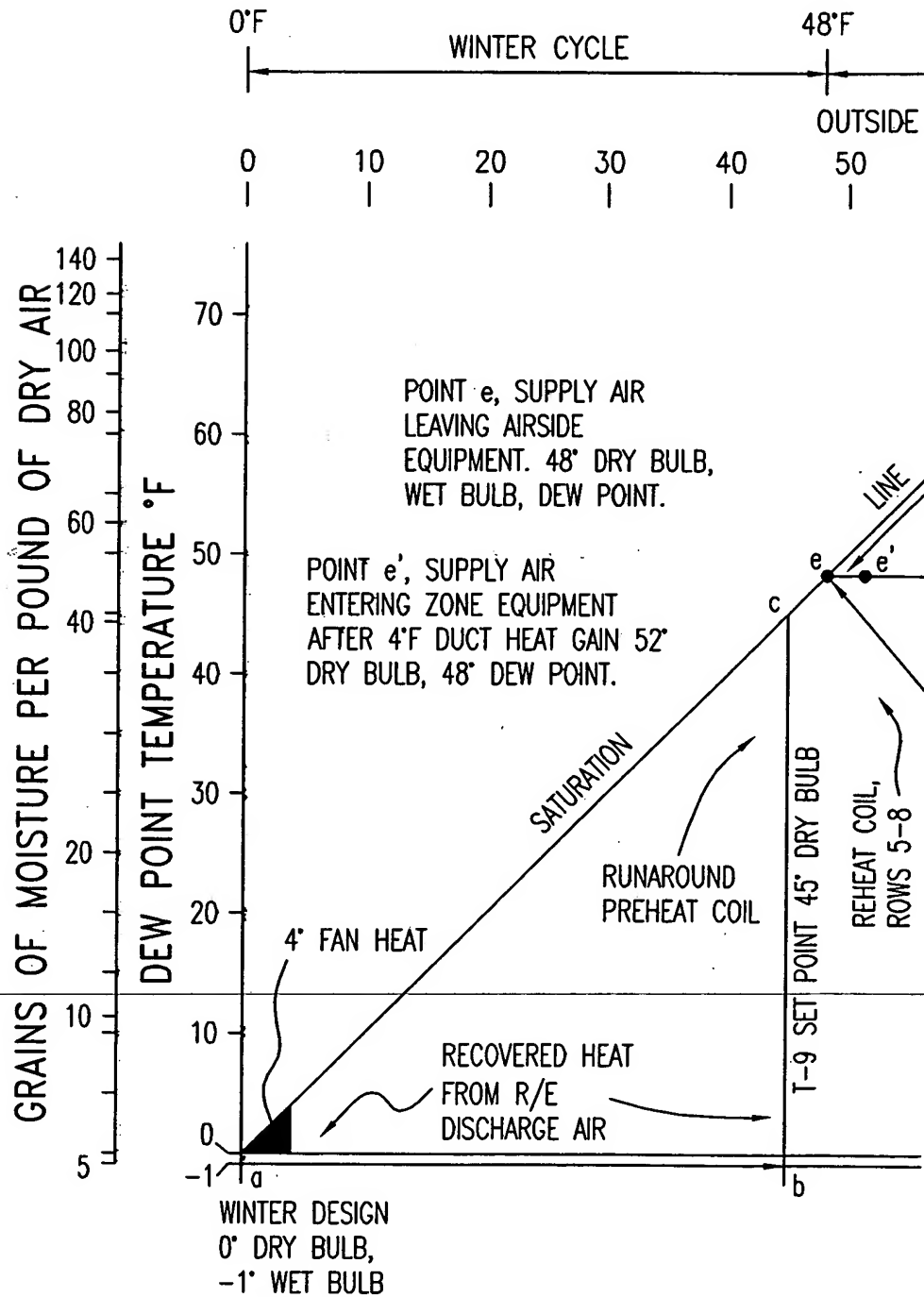


FIG. 4a

EQUIPMENT OUTSIDE TEMPERATURE °F

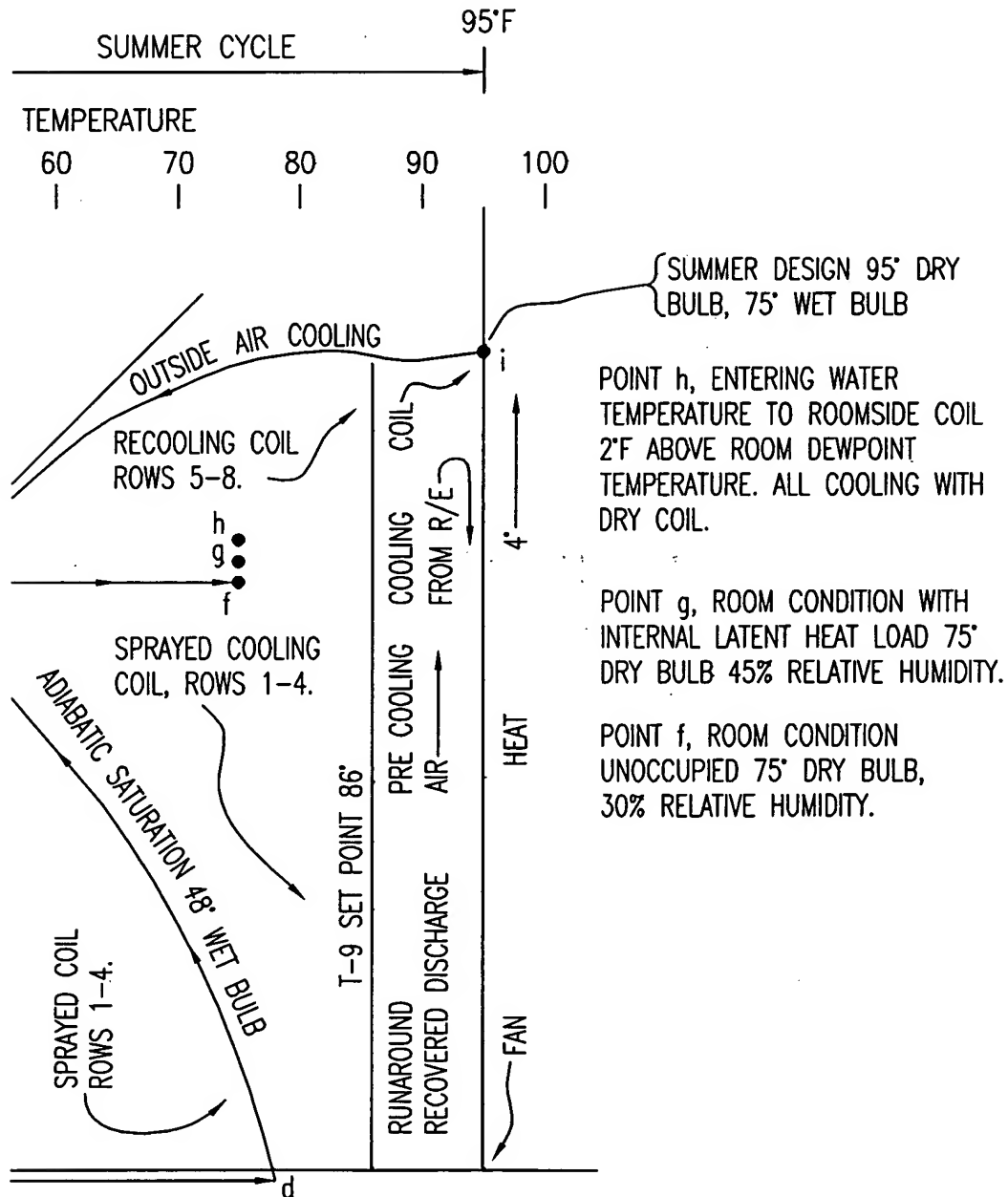


FIG. 4b

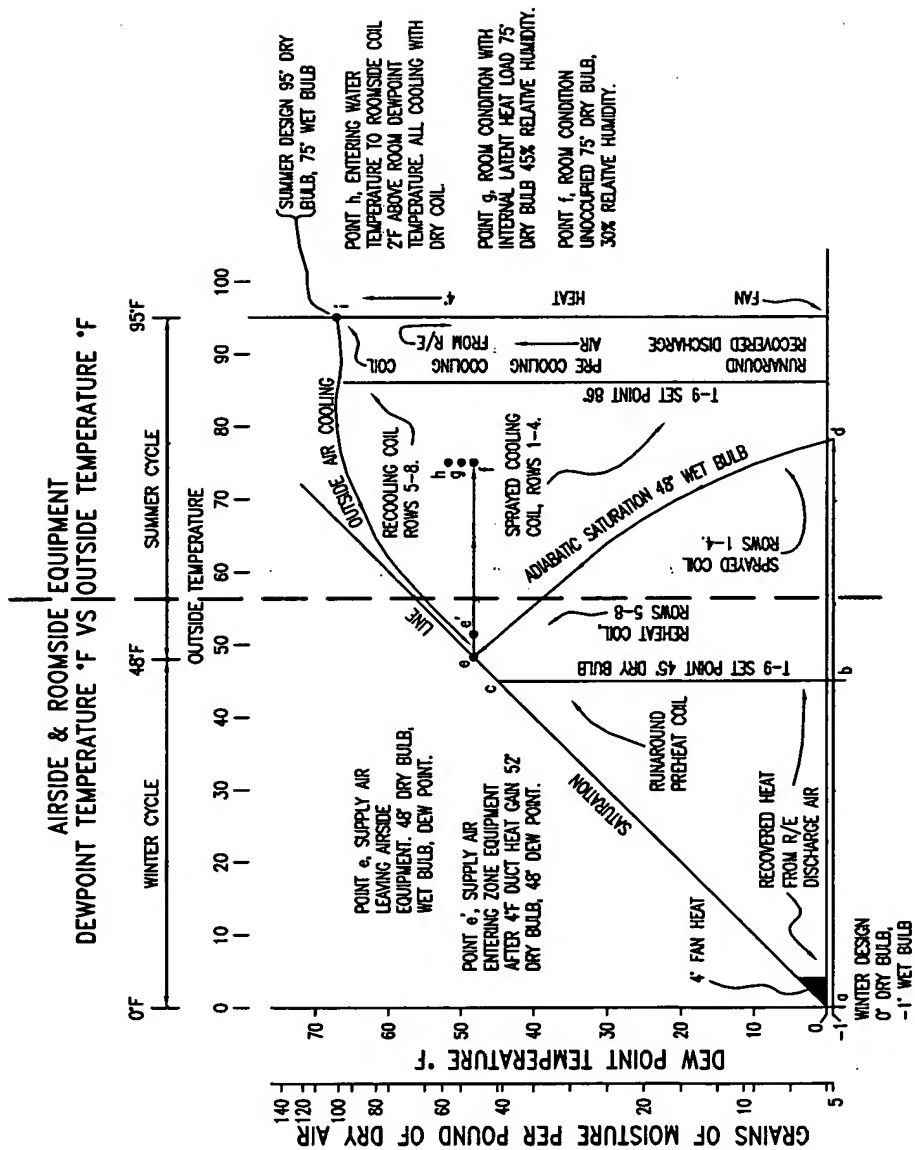


FIG. 4c

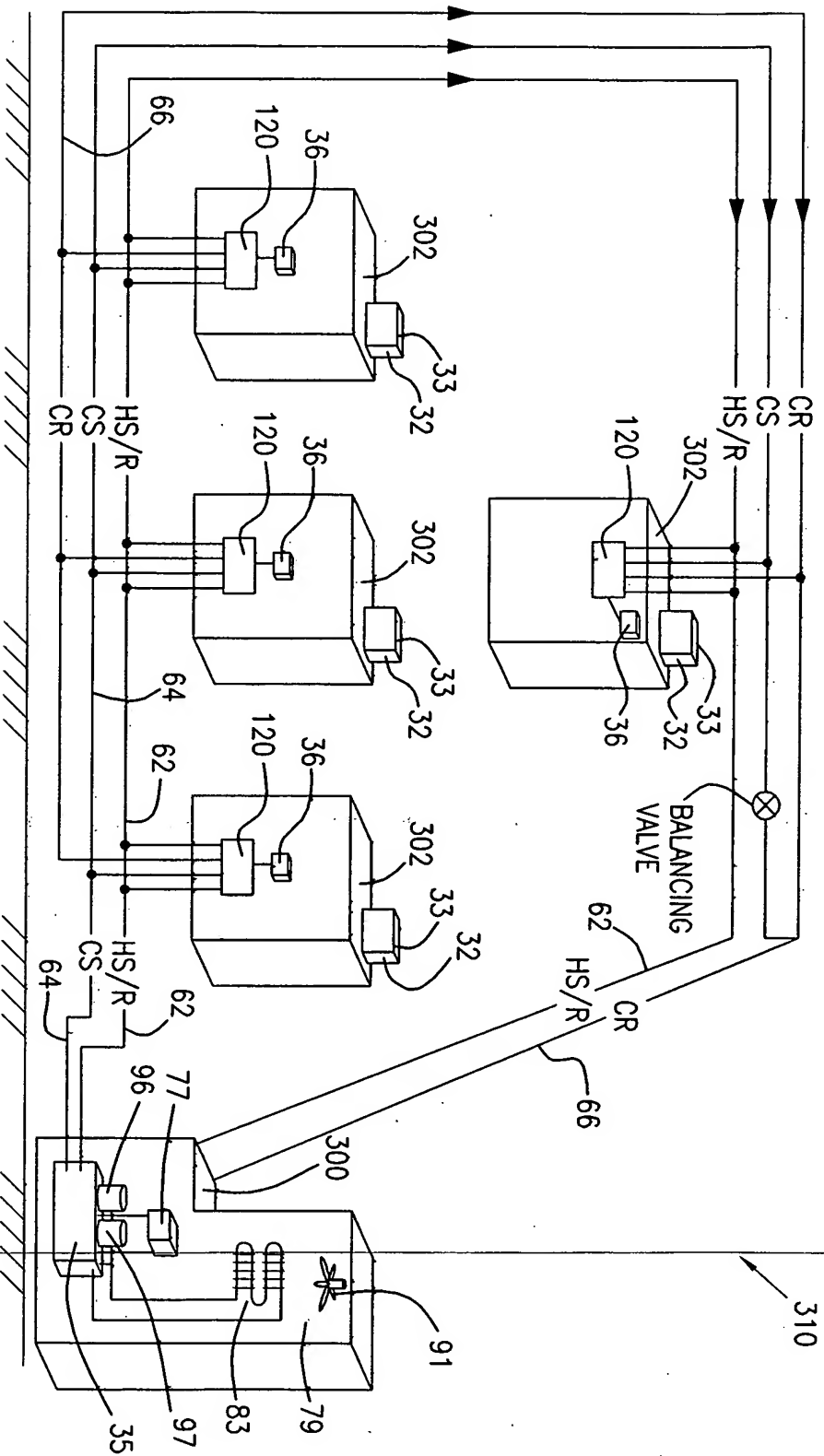


FIG. 5